

of replicated experiments, and in particular permits of the adjustments of such results to take account of variation in subsidiary factors beyond the experimenter's control. An account of the method was first included in the fourth edition, and since then it has proved of extreme utility. In the present edition this account is amplified by a description of the appropriate tests of significance to deviations from the regression formulæ, which had presented difficulty to several writers. The problem, in fact, was threatening to produce a considerable volume of statistical literature, and its solution is as timely as it is elegant.

In the field of partial regressions an account is added of the adjustments which are necessary when one or more of the variates used are finally omitted. These adjustments are relatively simple, and a knowledge of them may therefore encourage workers to include doubtful variates, knowing that they can eliminate them if they should prove unimportant.

For the rest the book remains the only adequate account of the methods which have made the author famous, and which have revolutionized the science of statistics. It has grown from 235 pages in the first edition to 319 pages in the fifth, so that even now it cannot be called voluminous. That the author has managed to comprise such a vast amount within such a small compass implies extreme compression. Whether such compression is to the liking of the reader depends on his temperament and ability; conciseness and lack of all unnecessary amplification undoubtedly stimulates thought, but vital points are apt to be missed. One type of compression which does appear to be a defect is the occasional introduction of some numerical quantity without adequate indication being given as to how it was arrived at. For instance in the section on covariance the reduction in sum of squares of the adjusted yields due to the elimination of rows and columns is given as from 25.09 to 15.09 in the fourth edition, but the former number has been changed to 24.08 in the fifth edition. I think that many readers will be puzzled as to the reason for this change.

Another addition which would be of great service to the serious student would be a classified list of references where applications and extensions of the methods of this book are to be found, with brief indications of their subject-matter and importance. There is a considerable body of statistical literature of very varying quality scattered through numberless journals; some guidance through this maze would enable the beginner who is not in touch with any statistical laboratory to supplement his study of the book more effectively than at present.

But it would be ungrateful to the author to end on any other note than praise. There can be no higher praise of this book than that no biological or sociological research worker can afford to be without it. It provides an insight into the difficult task of "making sense of figures" which has come as a revelation to many previously only acquainted with classical statistical theory. We may look forward with eager anticipation to the author's new work on the methods of experimentation, which he has done so much to develop, but which are only outlined in the present work.

F. YATES.

SEX AND CULTURE

Unwin, J. D., M.C., Ph.D. *Sex and Culture*. London, 1934. Oxford University Press, Humphrey Milford. Pp. 878. Price 36s.

THIS book breaks new ground, and adequate criticism of it would call for specialized knowledge in a number of fields: anthropology, history, pre-history, psychology and philosophy. Well over 600 pages of small type may discourage the average reader, but Dr. Unwin tells him what he may skip and still follow the essential thesis. Moreover, his critical method is pleasant, his exactitude stimulating, his humour pungent; and his crisp phrases and new-minted definitions are extremely refreshing. Briefly, his thesis is as follows:

For the study of culture, mankind is divided into two main groups: uncivilized and civilized. In the former only populations

of which current and recent descriptions are available have been included; the latter takes in all those peoples known to historical and archaeological research, or now existing, who at some phase excel in "social energy" as shown by expansion, domination of other peoples, and finally in the arts of controlling environmental forces. It is of some importance to note that the ambiguities of the term evolution are avoided by the conception "direction of the cultural process." Culture is judged by religion; the author is emphatic in condemning attempts to assess beliefs, and grades religion strictly by practice in the form of rites.

Among uncivilized peoples he distinguishes three cultures: (a) Zooistic, in regard to which he uses the phrase "dead level of conception." For this group only the "unusual" stands out from this dead level, and calls attention to the powers in the universe. (b) Manistic. This stage is characterized by definite rites applied to the departed which the author places under the categories "tendance" and "cult." He finds in these rites a constant relation between the attempts to control the weather and the treatment of affliction. (c) Deistic, in which the maintenance of a right relation to the departed and the powers of the universe is accompanied by sufficient "social energy" for the erection of temples and the employment of priests.

All forms of rite and cult studied are analysed in terms of the following questions: Is the act performed in the right place, in the proper way, at the proper time, and by the proper person?—and it is illuminating to see what at first would appear to be a heterogeneous mass of customs, resolve itself into order under this treatment. As the author says: "Human culture can be divided into definite patterns which are based on a study of human behaviour, i.e. on rites. There is an intense variety within these patterns. A change in a cultural pattern is due to a change in ideas. Behaviour changes when opinions alter."

Civilized society is taken mainly as rationalistic; the deistic culture, however, occurs and, where conditions to be described

shortly foster a sufficient intensity of social energy, this passes over into the rationalistic.

Besides these groups, Dr. Unwin now bases a further sub-division of mankind on the scale of the limitation of sexual opportunity, judged according to the following standards: (a) pre-nuptial freedom; (b) irregular or occasional continence; (c) pre-nuptial chastity. Wherever our knowledge of the group is sufficiently precise on these heads, the two series are found to coincide with complete exactitude. If the author had done nothing else he would have contributed greatly to the study of mankind by working out this striking analogy between sexual habit and stage of culture.

Dr. Unwin's explanation of this phenomenon is based on the Freudian theory. He suggests that where social regulations control the *libido*, this becomes canalized and shows itself in social energy. "If the members of any society have no unsatisfied requirements, the society is stable, inert, inactive; but if some requirements are unsatisfied, it is restless and unstable. If the unsatisfied requirements are those of hunger and thirst the society is likely to stampede. . . . If however the unsatisfied requirements are those of sex . . . some satisfaction must be sought elsewhere . . . and the evidence is that the effect of this dissatisfaction is to awaken the potential powers. . . . and to create what I have called human energy. As a result of a display of this energy, uniquely human, the society rises in the cultural scale . . . conversely, if complete direct satisfaction becomes the rule the energy of the society begins to decrease and the society falls in the cultural scale." Dr. Unwin describes again and again the occurrence of this process, of which the first symptom he shows with equal regularity to be the attainment by the women of the group of social and political equality with the males.

Unacceptable as this discovery may be, to the reviewer it seems inescapable; but not the author's Freudian explanation. To quote his generalization: "So far as the production of social energy is concerned, the sexual opportunity of the female is of more importance than that of the male. Thus, if the male

members of an absolutely polygamous society mate with the females of an absolutely monogamous society, the new generation display a greater energy." In passing it may be noted that Dr. Unwin shows no tolerance for celibacy; indeed, he instances the exclusion by the Normans of Anglo-Saxons from religious houses as the explanation for the thirteenth-century decline in the quality of the Norman stock.

The untenability, on biological grounds, of the author's Freudian view is best seen in his attribution of the short flowering of culture among the Moors in Spain to the energy created in successive generations by the marriage of polygamous males with women born in a strictly monogamous group. Energy generated in the mothers by unsatisfied *libido* is held to confer social energy on the sons. In his argument the author rejects evolution and natural selection; biologists would take them into account. Dr. Unwin himself lays great stress on the fact that all progressive cultures have been aristocracies and, indeed, for the most part, monarchies. He says that the trend in any society depends on the few, not on the many, and maintains that the "lower classes" in any community are never far removed from the Zooistic or, at best, the Manistic cultural level.

The various marriage systems which he describes appear to be so many variants of selection; and biologists recognize the fact that social selection tends to replace natural selection in advancing societies. Although it has not been widely noted, there is some evidence for the evolutionary value of monogamy and the stable family. It occurs notably in many of the higher forms of animal life. It is the pivotal point in social structure in all those societies which exhibit and have exhibited an intensive accumulation of outstanding human quality. Dr. Unwin's social energy embraces a variety of such faculties as intelligence, courage, imagination, and indeed all the higher human powers.

The family segregates heritable qualities into convenient packets for selection. In an aristocracy, after a number of generations of

selective mating, assortative mating within the higher grade gives just the biological conditions for a rapid advance of social energy. On biological grounds, it may be suggested that it is just those factors which Dr. Unwin rejects or ignores that are required for a true explanation of the observations he has made with such lucidity and erudition.

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PSYCHOLOGY

Gesell, Arnold, Ph.D., M.D., Sc.D., and Thompson, Helen, Ph.D., assisted by **Strunk, Amatruda Catherine, M.D.** *Infant Behaviour: Its Genesis and Growth.* London, 1934. McGraw-Hill Publishing Company Ltd. Pp. 343. Price 18s.

THE investigations of Gesell and his co-workers into infant behaviour represent the most reliable data at present available in this important field of genetic psychology. The establishment of norms of development has been the subject of study in the Yale Clinic under Gesell's direction since 1919. This book gives the results of work which began in 1927, and involved a study of 107 different infants, representing as far as could be determined a normal and homogeneous group. The period considered was from the fourth to the fifty-sixth week of life. Professor Gesell points out that the wealth and complexity of the behaviour of the infant concerned was beyond human description; he therefore used also the cinema, and in a separate atlas has made available typical specimens of the children's activity thus recorded. It is possible, however, without the atlas to learn from the present work what were the main findings in the numerous situations studied. These, contained in Chapter III, comprise the bulk of the text.

In succeeding chapters, the ontogenetic patterning of behaviour is considered, and the rôle of maturation in mental growth. The authors here deal with the hereditary aspect of the problem and, eschewing older formal and newer purely environmental